We Claim:

1. A method of operating a page width ink jet printhead within a predetermined thermal range to print an image, said printhead comprising:

an array of nozzles formed on a substrate, each nozzle including a nozzle opening, an associated displaceable thermal actuator for ejecting ink through said nozzle opening, an ink chamber and an activation unit for controlling operation of said actuator;

at least one temperature sensor attached to said substrate for sensing the temperature of said substrate;

a temperature determination unit connected to said at least one temperature sensor; and,

an ink ejection drive unit coupled to said temperature determination unit and to said printhead;

said method including the steps of:

(a) sensing the temperature of said substrate with said at least one temperature sensor and said temperature determination unit;

(b) said ink ejection drive unit determining if said temperature is below a predetermined threshold;

(c) if said temperature is below said predetermined threshold, performing a preheating step of heating said actuators so that the printhead is heated to a temperature above said predetermined threshold;

(d) controlling said preheating step such that said thermal actuators are heated by pulses of energy less than 160nJ, which are insufficient to cause the ejection of ink from said printhead, ejection of one ink drop from one said nozzle requiring at least 160nJ; and,

(e) utilizing said printhead to print said image.

2. The method as claimed in claim 1, further including the steps of:

(aa) initially sensing an ambient temperature surrounding said printhead; and

(ab) setting said predetermined threshold to be said ambient temperature plus a predetermined operational factor amount, said operational factor amount being dependent on said ambient temperature.

3. The method as claimed in claim 1, further including the step of:

(f) monitoring said printhead temperature whilst printing said image and when said temperature falls below said predetermined threshold, reheating said actuators to again raise the temperature of said printhead above said predetermined threshold.

4. The method as claimed in claim 1, wherein said step (b) comprises constantly monitoring said printhead temperature whilst heating said printhead.

5. The method as claimed in claim 1, further including the step of:

sensing the resistivity of a heater element associated with each said actuator and adjusting a width of said energy pulses to maintain a constant energy of said pulses to compensate for a variation in resistivity of the heater element with temperature.

6. The method as claimed in claim 1, wherein ejection of one ink drop from one said nozzle requires between 160 and 190 nJ.

7. A page width ink jet printhead comprising:

an array of nozzles formed on a substrate, each nozzle including a displaceable thermal actuator for ejecting ink on demand through a nozzle opening of its associated nozzle;

an activation unit for each nozzle for controlling operation of said actuators,

at least one temperature sensor attached to said substrate for sensing the temperature of said substrate;

a temperature determination unit connected to said at least one temperature sensor;

an ink ejection drive unit coupled to said temperature determination unit and to said printhead;

wherein, before an ink ejection operation is begun, said temperature determination unit utilizes an output from said at least one temperature sensor to sense a current temperature of said substrate, and if said temperature is below a predetermined

threshold, said ink ejection drive unit outputs a preheat activation signal to generate pulses of energy of less than 160nJ to heat each said thermal actuator to an extent sufficient to heat said substrate, while being insufficient for the ejection of ink from said array, ejection of one ink drop from one said nozzle requiring at least 160nJ.

8. The printhead as claimed in claim 7, wherein a plurality of said temperature sensors are spaced apart on said substrate.

9. The printhead as claimed in claim 7, wherein said array of nozzles is divided into a series of spaced apart groups with at least one temperature sensor per group.

10. The printhead as claimed in claim 7, wherein ejection of one ink drop from one said nozzle requires between 160 and 190nJ.

11. The printhead as claimed in claim 7, further comprising at least one pad for sensing the resistivity of a heater element associated with each said actuator to enable compensation for a variation in resistivity of the heater element with temperature.

12. The printhead as claimed in claim 7, wherein each said activation unit comprises a heater element external to said ink chamber of each said nozzle for heating said actuator.